



Vegetation

Management

Plan

2003 - 2007

The following Vegetation Management Plan (VMP) has been developed to ensure compliance with Rights-of-Way Management regulations (333 CMR 11.00).

TABLE OF CONTENTS

IDENTIFICATION AND QUALIFICATIONS OF APPLICANT	2
STATEMENT OF OBJECTIVES	3
DESCRIPTION OF TARGET VEGETATION	4
INTEGRATED ROADSIDE VEGETATION MANAGEMENT	7
JUSTIFICATION OF HERBICIDE USE	12
HERBICIDE APPLICATION METHODS	12
IDENTIFYING AND PROTECTING SENSITIVE AREAS	13
OPERATIONAL GUIDELINES FOR HERBICIDE APPLICATORS	17
MITIGATION MEASURES	18
ALTERNATIVE LAND USE OPTIONS	18
REMEDIAL PLAN TO ADDRESS SPILLS AND RELATED ACCIDENTS	19
EVALUATION AND RECOMMENDATIONS	20

IDENTIFICATION AND QUALIFICATIONS OF APPLICANT

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In his capacity as Chief Engineer for the Massachusetts Highway Department, Mr. Broderick is responsible for all design, construction and maintenance issues associated with the State's 3,000 mile State Highway System and 2,900 bridges. Mr. Broderick's twenty-seven year career with MassHighway includes tours of duty in survey, construction and highway engineering. In addition, Mr. Broderick was the former Deputy Chief Engineer for Highway Engineering and the former Manager of Engineering Expediting. A Registered Professional Engineer in Massachusetts, Mr. Broderick is a member of the Boston Society of Civil Engineers, the American Public Works Association and the American Association of State Highway and Transportation Officials. Mr. Broderick received his Bachelor of Science degree from Roger Williams College.

STATEMENT OF OBJECTIVES

This Vegetation Management Plan (VMP) is intended to establish the criteria whereby the Massachusetts Highway Department (MassHighway) controls vegetation along state roads and highways in compliance with the Rights of Way Management Regulations (333 CMR 11.00) as promulgated by the Massachusetts Department of Food and Agriculture. In the event of any revisions to the regulations, this plan will be revised in accordance with these changes.

The primary objective of the VMP is to provide a safe, unobstructed roadway corridor and preserve the integrity of the highway infrastructure. Left uncontrolled, roadside vegetation can impede normal maintenance operations, obstruct motorists' line of vision, threaten pedestrian safety and cause damage to structures such as median barrier, pavements, guard posts, drainage lines and waterways. Other objectives include development of an aesthetically pleasing roadside, pest control, provisions of habitat, and stabilization of embankments and other areas prone to erosion.

When roadside vegetative growth threatens the safety and comfort of the traveling public or maintenance personnel, jeopardizes the capital investment in the transportation infrastructure, or endangers environmental quality, MassHighway is charged with the responsibility of initiating vegetation management procedures.

To achieve this, MassHighway will implement an integrated roadside vegetation management program (IRVMP). The key components of this strategy will be to identify priorities for vegetation control, to implement controls in an environmentally sensitive manner, and to monitor success to refine methods and adjust priorities. Controls shall include mechanical, chemical and roadside development methods.

Although roadside development is not a control tool readily available to maintenance forces, it is included in MassHighway's IRVMP as it has become an efficient, cost effective method of vegetation management implemented as part of road widening/resurfacing/bridge related construction projects. MassHighway will continue to refine its specifications and construction policies to ensure that the roadside is not only safe for motorists, but also preserves the quality of the roadside environment, and that improvements will minimize demand for operational controls.

It shall be a goal of the IRVMP to minimize the use of chemical controls, through minimizing areas of application, quantity of chemicals, and frequency of application. Chemical control techniques shall be limited to use on high traffic volume, high speed interstate and primary roadways in the Commonwealth where safety of motorists, department employees and contractors precludes the use of mechanical methods

In addition the IRVMP will actively pursue testing and evaluation of alternative methods of vegetation control.

Over the 5-year period, MassHighway will constantly monitor and evaluate the success of the program and integrate appropriate new methods into the VMP and Yearly Operational Plans(YOP).

DESCRIPTION OF TARGET VEGETATION

MassHighway will inventory roadways and develop priorities for control of target vegetation. These areas will be mapped and prioritized on the basis of roadway volumes, speeds, and significance of vegetation condition.

From a highway operations standpoint, target vegetation along roadways falls into one or more of the following categories: hazard vegetation, detrimental vegetation, nuisance vegetation, and invasive vegetation. From a roadside vegetation management standpoint, target vegetation will be one or more of the following types: grasses, low-growing shrubs and vines, and tall growth (trees). Of these, some target vegetation may be determined to be persistent and invasive, meaning that the vegetation will re-sprout when removed by mechanical means.

- *Hazard Vegetation.* This category represents the primary target material, including vegetation obscuring sightlines, growing over guardrails, creating obstacles to signs or vehicular movement, posing windfall hazard over vehicular or pedestrian, or creating winter shade leading to icing conditions. A guardrail that is grown over with weeds, vines, or grass becomes an obstacle obscuring sight lines or causing motorists to veer toward the center of the road. In special instances conifers may present a hazard. In the winter months, shadows cast on roadways by evergreen trees can delay melting (especially in “low salt” areas) resulting in possibility of hazardous road conditions and an increase in the amount of de-icing chemicals (road salt) applied.
- *Detrimental Vegetation.* This category comprises grasses and woody plants that are destructive to or compromise the function of highway structures, including grasses in pavement and bridge joints, medians barriers and traffic islands, as well as vegetation with drainage structures and compromising drainage ways. The roadway drainage impact of vegetation creates stormwater accumulation and hazardous icing conditions.
- *Nuisance Vegetation.* This category includes any vegetation growing along state roadways that could potentially cause problems to the general public and/or MassHighway employees or contractors maintaining the ROW. The overwhelming majority of plant material to be controlled in this instance is Poison Ivy (*Radicans*). Poison Ivy and other nuisance vegetation growing within 30 feet of the edge of pavement, bridge abutments, a drainage structure or swale, other structures and appurtenances requiring maintenance, within MassHighway ROW, will be considered target vegetation.
- *Invasive Vegetation.* Some areas of MassHighway ROW have become heavily infested with invasive plant species. Working with input from environmental agencies, MassHighway will seek opportunities to remove invasive material and to encourage growth of native species. Specific target invasive plants include but are not limited to Tree of Heaven (*Ailanthus altissima*), Japanese Knotweed (*Polygonum cuspidatum*), Multiflora Rose (*Rosa multiflora*), Oriental Bittersweet (*Celastrus* spp.), and Autumn Olive (*E. umbellata*) and Russian Olive (*E. angustifolia*)

DESCRIPTION OF TARGET VEGETATION (continued)

Detrimental grass damages state infrastructure and is unsightly.



Hazard vegetation impedes pedestrian movement.

DESCRIPTION OF TARGET VEGETATION (continued)



Hazard vegetation impacts sight distance.

INTEGRATED ROADSIDE VEGETATION MANAGEMENT

MassHighway's Integrated Roadside Vegetation Management (IRVM) methods include **roadside development** (active planting to encourage appropriate competing vegetation, non-organic barriers), **mechanical** (mowing, hand cutting, selective trimming) and **chemical** (low volume foliar herbicide treatments). Each one of these methods has benefits and impacts, and each one by itself will not work effectively for long term vegetation management. However, when these methods are combined – integrated, they complement one another in terms of both effectiveness and minimization of environmental impacts.

The methods listed above will be chosen by MassHighway personnel familiar with the right of way, based on a variety of factors including, but not limited to, location, environment, terrain, and public/employee safety. The method chosen for a given vegetation problem will attempt to achieve a long term, low maintenance vegetation management program through the encouragement of a stable herbaceous community.

Roadside Development

A key aspect of the MassHighway IRVMP is the development of the roadside through MassHighway construction projects. MassHighway Landscape Restoration Policy seeks the creation of sustainable low-maintenance landscapes that preserve and protect the natural and cultural resources surrounding the roads. Measures to be implemented include:

- MassHighway will continue to pursue options for limited mowing strategies to develop a sustainable roadside consistent with operation safety requirements.
- MassHighway will refine seeding and planting specifications with a goal of establishing self-sustaining/low maintenance plantings.
- Working with EOEA and other agencies, MassHighway has eliminated the use of invasive species for roadside planting.
- Where feasible MassHighway will use native trees, shrubs, wildflowers and grasses.
- Where consistent with Federal and MassHighway Policy to allow private abutters to maintain roadside vegetation.

In addition to these landscape strategies, the MassHighway will continue to pursue technological developments that will lead to reduced control requirements. These include:

- Continued use of under-guardrail mulches and weed barriers.
- Continued exploration of appropriate sealants and other strategies to reduce vegetation establishment in pavements and highway structures.

INTEGRATED ROADSIDE VEGETATION MANAGEMENT (cont.)

Mechanical

- Mowing
- Hand Cutting
- Selective Trimming

Mowing is the principal vegetation control method employed by MassHighway. Mowing consists of the seasonal, mechanical cutting of target vegetation using machines. MassHighway utilizes several types and sizes of mowers including, large gang tow tractor mowers, 6 ft. rear deck tractor mowers, 10 ft. flex wing rotary tractor mowers, articulated boom tractor mowers, small ride-on lawn mowers, push mowers and line trimmers (weed whackers). Selection of specific equipment is based on terrain, target vegetation size and equipment availability. Mowing will be utilized in areas where terrain and target stem size permit safe and efficient use of the equipment.

Hand cutting consists of the mechanical cutting of target species using chain saws and brush saws. Target species are cut as close to the ground as practical with stump heights usually not exceeding three inches. Hand cutting is used in order to protect environmentally sensitive sites. It is also used on target vegetation greater than four feet tall where herbicide use is prohibited or on non-sprouting conifer species greater than six feet in height. Hand cutting is used on those restricted sites where terrain, site size or sensitivity renders mowing impossible or impractical. This method may be practiced at any time of the year.

Selective trimming consists of the mechanical pruning of the tops of encroaching limbs of tall trees, which may hamper access to the roadway. This trimming will be accomplished using aerial lifts mounted on trucks or tractors or, if terrain or obstructions prevent equipment access, by climbing crews.

INTEGRATED ROADSIDE VEGETATION MANAGEMENT (cont.)



TYPICAL MOWING OPERATIONS

INTEGRATED ROADSIDE VEGETATION MANAGEMENT (cont.)

Chemical

- Foliar Treatment
- Cut Stump Surface Treatment

MassHighway is committed to minimizing its use of chemicals for vegetation control. Chemical herbicides shall be limited to selected high traffic volume, high-speed roadways where the placement of personnel and equipment in or around the roadway would jeopardize the safety of the motoring public, MassHighway employees and/or contractors. There are two methods of herbicide application that may be utilized by MassHighway, foliar treatment and cut stump surface treatment.

Foliar Treatment is the application of herbicides to fully developed leaves, stems, or blades of a plant. The herbicide is mixed or diluted with water and applied as a uniform spray over the entire foliage of the plant. This is generally the most effective and economical method, particularly in areas where mechanical methods preclude the safe placement of men and equipment. It is also the best technique to control noxious and poisonous vegetation that presents a hazard to pedestrians, and inspection and maintenance crews.

MassHighway will utilize post-emergent, low volume, low pressure foliar treatment herbicide applications only. All herbicides used by MassHighway have been researched, tested and approved by the Department of Food & Agriculture (DFA) for use in "Sensitive Areas." The application of herbicides to bare ground shall be avoided.

Cut Stump Surface Treatment is the application of an herbicide to the cut surface of a stump immediately following or during a cutting operation. In this case, to prevent re-sprouting, it is only necessary to treat the phloem and cambium tissue, regardless of the stump diameter. Ideally, treatment should be made to freshly cut stumps, and avoided during the season of high sap flow. Application equipment includes hand held squirt bottles, paint brushes or sponge applicators. This method is not practical in moderate or heavy stem densities but offers the opportunity to chemically treat undesirable vegetation in sensitive or difficult to access sites where other methods are not possible.

When used in concert, the chemical and mechanical components of an IVM program support the establishment of low-growing, favorable plant communities. Herbicides are the most effective and environmentally sound means for preventing the re-growth of target vegetation. Chemical controls are, therefore, an integral part of an IVM program and the selective and judicious use of herbicides is critical in the effective management of undesirable vegetation along state roadways.

INTEGRATED ROADSIDE VEGETATION MANAGEMENT (cont.)**SUMMARY OF CONTROL METHODS**

TARGET*	CONDITIONS	CONTROL METHODS
Grasses	Where terrain and traffic conditions allow	Mechanical (mowing)
Grasses And Low Growth	Under guardrail; or Pavement Cracks; or Joints Where: -Traffic volumes and speeds pose a hazard to motorists and MHD employees or contractors	Chemical (low volume foliar treatment)
Low Growth	-Terrain allows; and -species are not persistent or invasive	Mechanical (mowing)
Low Growth	-Terrain prevents mowing; and -Species are not persistent or invasive	Mechanical (hand cutting)
Low Growth	Terrain prevents mowing, species are persistent and invasive	Chemical (low volume foliar treatment)
Low Growth	Poison Ivy that is -in ROW; and -within thirty (30) feet of pavement, or any MHD structure or appurtenance	Chemical (low volume foliar treatment)
Tall Growth	-Individual trees or branches	Mechanical (selective trimming)
Tall Growth	-Plants >12 feet; or -Terrain too steep; and -Species are not persistent or invasive	Mechanical (hand cutting)
Tall Growth	Plants >12 feet; and -Species are persistent and invasive	Chemical (cut stump surface treatment)

***Target vegetation shall include vegetation hazardous, detrimental, or nuisance vegetation, as determined by MassHighway personnel.**

JUSTIFICATION OF HERBICIDE USE

The long-term goal for every VMP, MassHighway or other, is to reduce the need for vegetation management. MassHighway will implement an integrated approach to vegetation management by encouraging plant communities that hinder the development of target vegetation. This program will utilize roadside development, mechanical and chemical methods to control vegetation and will address public, environmental, employee safety and economic concerns by minimizing the applications of and reliance on herbicides.

To date, there is no environmentally, economically feasible and safe ROW management program that eliminates the use of herbicides altogether. In particular, guardrails, medians and traffic islands on high-speed high-volume roads present conditions unsafe for personnel hand-cutting operations. Many of the species growing in these conditions are invasive and persistent, and cannot be adequately controlled without chemical treatment. Noxious plants, Poison Ivy in particular, are not only invasive and persistent, but present a potential health hazard to mechanical equipment operators, as well as the general public.

In addition, under certain conditions, MassHighway may also use herbicides to remove persistent invasive vegetation as part of a larger effort to establish sustainable and/or native materials.

Consequently, public and occupational safety considerations require judicious use of chemical controls. Specific herbicides and their application are discussed under the *Operational Guidelines* section.

HERBICIDE APPLICATION METHODS

MassHighway will utilize two methods of herbicide application, foliar treatment and cut stump surface treatment.

Chemical foliar treatments involve the selective application of approved herbicides and adjuvants diluted in water, to the foliage and stems of the target vegetation. The foliar treatment used shall be low pressure, below 60 psi at the nozzle, with a normal working pressure of 40 psi for application at volumes of less than 50 gallons/acre.

Low pressure nozzles will be used to produce the largest possible droplet size and a drift control agent shall be added at the rate recommended on the label to keep spray drift to an absolute minimum. Previous studies and experience indicate minimal drift occurs when using low- pressure applications and adjuvants.

HERBICIDE APPLICATION METHODS (continued)

To control vegetation beneath and immediately adjacent to guardrail, a low-pressure foliar treatment shall be applied using a truck mounted spray boom, attached to either side of the front of the unit. In addition, a separate handgun equipped with a low pressure nozzle and adequate length of hose will be used for low-pressure, low-volume spot treatments of target vegetation growing in pavement, median and traffic island cracks, around bridge structures, drainage structures, sign posts and other structures and appurtenances.

The herbicide solution is applied to lightly wet the target plant. This technique has few limitations with the exception of reduced effectiveness on tall, high-density target vegetation and will not be used on vegetation over 12 feet in height. This type of vegetation will be controlled using mechanical methods followed by an application of an approved herbicide with a portable pressurized canister or manually painted on the freshly cut surface of the remaining stump (Cut Stump Surface Treatment).

Low-pressure foliage applications will take place when plants are in full leaf and actively growing, or in accordance with the manufacturer's recommendations.

IDENTIFYING AND PROTECTING SENSITIVE AREAS

Sensitive areas are defined as areas within rights-of-way in which public health, environmental or agricultural concerns warrant special protection to further minimize risks of unreasonable adverse effects (of herbicides) and include public groundwater supplies, public surface water supplies, private drinking water supplies, surface waters, wetlands, rivers, inhabited areas and agricultural areas. For the purpose of identification, sensitive areas can be separated into two categories: areas that are and are not readily identifiable in the field. A significant amount of research and field-work is applied to locating and delineating sensitive areas.

Sensitive areas that are not readily identifiable in the field include public groundwater supplies, private water supplies and public surface water supplies. Sources available to identify these areas include:

- Massachusetts Department of Environmental Protection (DEP) Water Supply Maps (1:25,000); delineating the perimeter of public watersheds and the location of public wells.
- Massachusetts DEP Wetland Conservancy Maps (scale 1:1,000).
- Municipal maps and records.
- Regional Planning Agencies maps and records.
- U.S. Fish and Wildlife Service National Wetlands Inventory Maps, available from the University of Massachusetts, Cartographic Information Research Services, Amherst.
- Conservancy Program & Ortho Photo and Information - Massachusetts DEP (1:5000).
- Identification of public and private well locations will be requested in writing from the Board of Health in each community where herbicide applications are proposed.
- National Heritage and Endangered Species Program

IDENTIFYING AND PROTECTING SENSITIVE AREAS (cont.)

Sensitive areas that are readily identifiable in the field include surface waters, wetlands, rivers and agricultural areas. The method utilized to identify these sensitive areas will be as follows:

- Consult EOEa MassGIS spatial data maps to locate any of these sensitive areas that may already be identified on these maps.
- Prior to commencement of herbicide application operations, the treatment crew will be provided the marked topographic map.
- The treatment crew will visually survey the area to be treated for any additional sensitive areas as well as areas where the ground is bare or has limited re-growth from previous herbicide applications.

The following is a description of how the sensitive areas will be identified for required protection:

- Consult the appropriate reference materials and sources to determine the precise location of these areas.
- Place the boundaries of these sensitive areas on U.S. Geological Survey (USGS) topographical maps, CAD (Computer Aided Drafting) drawings or GIS output.
- Prior to commencement of herbicide application operations, MassHighway personnel will install permanent color-coded plastic delineators to mark the boundaries. In addition, the treatment crew will be provided the marked up topographic map and CAD drawings with which to identify the boundaries of these sensitive areas.
- MassHighway will deploy a qualified point person in advance of the main herbicide application operation to identify the delineation markers and boundaries of the appropriate buffer zone. This information is then transmitted in advance to the treatment crew via two-way radio. This communication insures that only the appropriate areas are treated and minimizes the chance of mistakes.

IDENTIFYING AND PROTECTING SENSITIVE AREAS (continued)

SENSITIVE AREA RESTRICTIONS

Sensitive Areas are defined as areas within rights-of-way in which public health, environmental or agricultural concerns warrant special protection to further minimize risks of unreasonable adverse effects (of herbicides).

Note: MassHighway's herbicide applications are limited to low pressure foliar techniques or cut-stump applications only.

<u>SENSITIVE AREA</u>	<u>NO-SPRAY ZONE</u>	<u>SENSITIVE AREA RESTRICTIONS</u>
Public Water Supply Wells	400 feet	Within an approved Zone II or IWPA: 24 months must elapse between applications and herbicides are applied selectively by low pressure foliar techniques or by cut-stump applications.
Private Drinking Water Source	50 feet	50 – 100 feet: 24 months must elapse between applications and herbicides are applied selectively by low pressure foliar techniques or by cut-stump applications.
Surface Waters Sources, Feeder Streams and Class B Drinking Water Intakes	Within a defined Zone A area of a surface water source and/or any feeder stream to a surface water source or within a lateral distance of 100 feet for 400 feet upstream of a Class B Drinking Water Intake	Within 200 feet of a defined Zone A of a surface water source or within 100 feet of a defined Zone A of any associated feeder stream to a surface water source or within a lateral distance of 100 feet between 400 feet and 500 feet upstream of a Class B Drinking Water Intake: 24 months must elapse between applications and herbicides are applied selectively by low pressure foliar techniques or by cut-stump applications.
Coastal waters, estuaries, lakes and ponds	50 feet	50 – 100 feet: 12 months must elapse between applications and herbicides are applied selectively by low pressure foliar techniques or by cut-stump applications.

IDENTIFYING AND PROTECTING SENSITIVE AREAS (continued)

<u>SENSITIVE AREA</u>	<u>NO-SPRAY ZONE</u>	<u>SENSITIVE AREA RESTRICTIONS</u>
Riverfront Areas	100 feet of the mean annual high-water line	100 – 200 feet: 12 months must elapse between applications and herbicides are applied selectively by low pressure foliar techniques or by cut-stump applications.
Wetlands	25 feet	25 - 100 feet: 12 months must elapse between applications and herbicides are applied selectively by low pressure foliar techniques or by cut-stump applications.
Agricultural & Inhabited Areas	-----	0 - 100 feet: 12 months must elapse between applications and herbicides are applied selectively by low pressure foliar techniques or by cut-stump applications.
Certified Vernal Pools with water present	50 feet of the mean annual high water mark	50 – 100 feet: 12 months must elapse between applications and herbicides are applied selectively by low pressure foliar techniques or by cut-stump applications.
Certified Vernal Pools with no water present	25 feet of the mean annual high water mark	25 – 100 feet: 12 months must elapse between applications and herbicides are applied selectively by low pressure foliar techniques or by cut-stump applications.
<p>Rare Species: In the event of proposed herbicide application within any area designated as a “Significant Habitat” under the Massachusetts Endangered Species Act; or an “Estimated Habitat” as identified by the Massachusetts Natural Heritage and Endangered Species Program (NHESP) of the Massachusetts Division of Fisheries and Wildlife on Official Estimated Habitat Maps; or a “Priority Habitat” as identified by the NHESP, MassHighway shall submit to the NHESP a copy of the YOP, along with a notification of the proposed action and a detailed description of the activity concurrently with the submission of the YOP to the DFA.</p>		

OPERATIONAL GUIDELINES FOR HERBICIDE APPLICATORS

As required by regulation, applicators to roadside rights of way must hold a valid pesticide certification from the Department of Food and Agriculture. In addition to the applicable rules and regulations, applicators will adhere to the following operational guidelines:

Weather - Herbicide application will be restricted during certain adverse weather conditions, such as rain or wind. Herbicide applications will not be made during periods of moderate or heavy rainfall. Foliage applications are effective in light mist situations, however, any measurable rainfall that creates leaf runoff will wash the herbicide off the target plant. If foliar applications are interrupted by unexpected rainfall, the treatment will not resume until the rain ends and active leaf runoff has ceased.

Excessive wind can create drift during foliage applications causing damage to desirable vegetation. To minimize off target drift, the applicator will comply with the following restrictions:

- The applicator will monitor wind conditions to insure that there is no significant movement of the herbicide. If the applicator can see the herbicide moving off target, the application will immediately stop until the wind has subsided enough to permit further application.
- All herbicide solutions to be used for a foliage application will contain low drift agents. Low drift agents will be added to the foliage herbicide solutions as per the low drift agent label. In moderate wind conditions, as per label recommendations, more low drift agent may be added, at the discretion of the applicator to control increased drift.
- Foliar treatments will not be made to target vegetation that exceeds approximately four feet in height.

Equipment Calibration – Low-pressure foliar application equipment will be calibrated to maintain pressure not exceeding 60 pounds per square inch at the nozzle. The equipment will be calibrated and a Spray Controller will be used to deliver a consistent flow rate of 40 gallons/Acre.

For application to guardrail areas, a series of two (2) low pressure nozzles shall be properly mounted on a boom, spaced to overlap 30 to 50%. The spray pattern will be a narrow oval with lighter edges and, at a normal working pressure of 40 psi, will produce small to medium droplets. The boom will be kept as low as possible to reduce the drift hazard and give a uniform distribution of spray material. Throttles will be kept to the minimum setting required to transport herbicide solution to the tops of each target plant and penetrate the foliage to the main stem of the target plant.

MITIGATION MEASURES

Monitoring and Record Keeping – An inventory of all roadsides will be taken, with information on the prevailing type of vegetation, terrain, highway condition and current maintenance practice included. Research identifying which treatment(s) promotes the goals of the program will follow. The decision to use one of the vegetation control techniques described above will depend on evaluating the specific situation. The goal of the control method will be to establish an easily maintainable, stable plant population that will not interfere with vehicles or pedestrians. Emphasis will be given to the control method that will address the vegetation problem in the most environmentally sound manner and in a way to minimize vegetation control in the long term.

Monitoring will include project record keeping to maintain timely information on the nature, timing, and location of actions taken, including project location, weather conditions, miles completed, amount of material used, worker and equipment hours devoted to the project, persons responsible for activity and follow-up evaluation. Chemically treated areas shall be monitored after the necessary translocation period of the herbicide to determine the effectiveness of the applications and to monitor any off target injury and migration of the spray solution.

MassHighway will conduct training for district staff in methods of vegetation management, employee safety and record keeping. The contact people for each District are as follows:

- Thomas F. Ferris Jr., Program Manager, Boston Headquarters, (617) 973-7796
- Timothy Meyer, Environmental Engineer, District 2 Northampton Office, (413) 584-1611
- Arthur Resca, Roadsides Engineer, District 3 Worcester Office, (508) 929-3848
- Tom Loughlin, Assistant District Highway Director, District 4 Arlington Office, (781) 648-8300
- Donald Dwelly, Roadsides Engineer, District 5 Taunton Office, (800) 635-3590 ext 4221

Where operational constraints allow, MassHighway will actively pursue selected test applications to evaluate herbicide alternatives, such as corn gluten meal, acetic acid mixtures, and steam applications.

ALTERNATIVE LAND USE OPTIONS

MassHighway will review and evaluate new and innovative alternative land uses within its ROW. However, specific criteria must be met for adoption of alternative land use options. The alternative land use option must control the undesirable vegetation in a similar manner, ecologically and efficiently as allowed in this IRVMP. For example, a common practice of abutters to roadways is to mow and maintain road shoulders. In this instance, the monitoring program would reveal that the area does not warrant vegetation control.

REMEDIAL PLAN TO ADDRESS SPILLS AND RELATED ACCIDENTS

All mixing and loading of herbicides will occur at the storage facility in amounts of herbicide necessary to carry out that day's work. This will minimize waste and the need of excess handling. The spray vehicle will be equipped with a clipboard log of the herbicides on board, a bag of adsorbent, activated charcoal, plastic bats, a broom and a shovel in case of a minor spill.

Major Spills and Related Accidents - For the purpose of this VMP, major spills involve reportable quantities of hazardous materials as defined by the Department of Environmental Protection (DEP) 320 CMR 40.000. Related accidents include fire, poisoning and automobile accidents.

- a) Administer proper first aid and call an ambulance and/or Massachusetts Poison Information Center in cases involving injury due to poisoning.
- b) Call the police and/or fire department in cases involving automobile accidents or fire.
- c) Avoid breathing fumes of burning herbicides.
- d) Put out all sources of fire. Do not light flares, cigarettes, etc. which can ignite certain herbicides.
- e) If possible, control the spill by stopping the leak or source of spill.
- f) Confine the spread of liquids with a dike composed of soil or other absorptive materials.
- g) Call ChemTrec, Massachusetts Pesticide Bureau or chemical manufacturer for assistance (see phone listing below) if unable to handle the spill or the material is unfamiliar.
- h) Notify the DEP if water bodies are contaminated, and for releases or threatened releases of reportable quantities of hazardous material.
- i) Notify the District Hazardous Material Coordinator.
- j) Clean up spill:
 - 1) If the spill occurs in a public location, isolate the spill areas and deny unauthorized entry until cleanup is complete.
 - 2) Absorb spilled liquids with sand, absorptive clay, spill control gel, vermiculite, pet litter, sawdust or other absorptive material. Wear proper protective clothing and equipment.
 - 3) Sweep or shovel contaminated absorbent into a leak proof, sealable container for proper disposal.
 - 4) Dry herbicides, such as dust, granular and pellets can be directly swept or shoveled into leak proof sealable containers without absorptive materials.
 - 5) Neutralize contaminated area with hydrated lime, sodium hypochlorite (bleach), or soapy water. Never mix bleach and ammonia base products or a poisonous gas will result.
 - 6) Dispose of contaminated material at an approved location.

REMEDIAL PLAN TO ADDRESS SPILLS AND RELATED ACCIDENTS (continued)

Minor Spills - Minor spills involve less than reportable quantities of hazardous materials.

- a) In case of contact with herbicides, wash with plenty of soap and water. Administer proper first aid and see a doctor, if necessary.
- b) Change clothing which has absorbed herbicides.
- c) Clean up spill. (Same as above for major spills).

In the event of a spill, information on safety precautions and clean up procedures may be gathered from the following sources:

- Herbicide label
- Herbicide MSDS sheet
- Herbicide Manufacturers
 - Dow (517) 636-4400
 - Dupont (800) 441-3637
 - Monsanto (314) 694-4000
 - American Cyanamid Co. (201) 835-3100
- Massachusetts DFA - Pesticide Bureau (617) 626-1700
- Massachusetts DEP Incident Response Unit (617) 556-1133
or (888) 304-1133
- ChemTrec (800) 424-9300
- Massachusetts Poison Control Center (800) 682-9211
- Massachusetts Department of Public Health
Bureau of Environmental Health Assessment
Environmental Toxicology Program (617) 624-5757

EVALUATION AND RECOMMENDATIONS

On an annual basis, MassHighway will evaluate the success of the vegetation management program. This evaluation will include reporting of control measures by district, as well as quantities of herbicide used and total area treated. In addition, in light of the goals of this plan, the condition of the roadside will be evaluated. Finally, the evaluation will make recommendations, including any possibilities for reducing mechanical and/or chemical controls. MassHighway will provide a copy of the evaluation report annually to the Pesticide Board.